

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
5 February 2004 (05.02.2004)

PCT

(10) International Publication Number
WO 2004/011498 A3

(51) International Patent Classification⁷: **C07K 14/58**,
A61K 38/22

(21) International Application Number:
PCT/CA2003/001097

(22) International Filing Date: 29 July 2003 (29.07.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/400,199 31 July 2002 (31.07.2002) US
60/400,413 31 July 2002 (31.07.2002) US

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(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,

LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)
- of inventorship (Rule 4.17(iv)) for US only

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) Date of publication of the international search report:

24 June 2004

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: LONG LASTING NATRIURETIC PEPTIDE DERIVATIVES

(57) Abstract: This invention relates to long lasting natriuretic peptide (NP) derivatives. The NP derivative has a NP peptide and a reactive entity coupled to the NP peptide. The reactive entity is able to covalently bond with a functionality on a blood component. In particular, this invention relates to NP derivatives having an extended *in vivo* half-life, and method for the treatment of cardio-vascular diseases and disorders such as acute decompensated congestive heart failure (CHF) and chronic CHF.

WO 2004/011498 A3

INTERNATIONAL SEARCH REPORT

International Application No

PCT/CA 03/01097

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C07K14/58 A61K38/22

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C07K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, BIOSIS, MEDLINE, EMBASE, CHEM ABS Data, EMBL

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 00/69900 A (CONJUCHEM INC ;HOLMES DARREN L (CA); BRIDON DOMINIQUE P (CA); THIB) 23 November 2000 (2000-11-23) page 3, line 19 - page 4, line 20 page 9, lines 20-32 page 11, line 28 - page 12, line 11 page 31, line 15 - page 33, line 2 page 84, lines 3-6 page 159, lines 5-8 SEQ ID NO: 476 ----- -/--	1-26



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

* Special categories of cited documents:

A document defining the general state of the art which is not considered to be of particular relevance

E earlier document but published on or after the international filing date

L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

O document referring to an oral disclosure, use, exhibition or other means

P document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

& document member of the same patent family

Date of the actual completion of the international search

29 December 2003

Date of mailing of the international search report

29.04.04

Name and mailing address of the ISA

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/CA 03/01097

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
T	<p>LEGER ROGER ET AL: "Synthesis and in vitro analysis of atrial natriuretic peptide-albumin conjugates." BIOORGANIC & MEDICINAL CHEMISTRY LETTERS, vol. 13, no. 20, 20 October 2003 (2003-10-20), pages 3571-3575, XP001156881 ISSN: 0960-894X page 3572, left-hand column, paragraph 2 - page 3574, right-hand column, paragraph 1 -----</p>	1-26

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CA 03/01097

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.: 17, 21, 24-26 (part)
because they relate to subject matter not required to be searched by this Authority, namely:
Although claims 17, 21, 24-26 are directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
1-4, 10-26 (part)

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.1

Although claims 17, 21, 24-26 are directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.

Continuation of Box I.1

Claims Nos.: 17, 21, 24-26 (part)

Rule 39.1(iv) PCT - Method for treatment of the human or animal body by therapy

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/CA 03/01097

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 0069900	A	23-11-2000	AT 252601 T	15-11-2003
			AT 226593 T	15-11-2002
			AU 764103 B2	07-08-2003
			AU 4774800 A	05-12-2000
			AU 754770 B2	21-11-2002
			AU 4855500 A	05-12-2000
			AU 761591 B2	05-06-2003
			AU 5027100 A	05-12-2000
			AU 765753 B2	25-09-2003
			AU 5139300 A	05-12-2000
			BR 0010750 A	26-02-2002
			BR 0010757 A	19-02-2002
			CA 2363712 A1	23-11-2000
			CA 2372338 A1	23-11-2000
			CA 2373252 A1	23-11-2000
			CA 2373680 A1	23-11-2000
			CN 1350548 T	22-05-2002
			CN 1351611 T	29-05-2002
			DE 60000665 D1	28-11-2002
			DE 60000665 T2	26-06-2003
			DE 60006100 D1	27-11-2003
			DK 1180121 T3	01-03-2004
			EA 3922 B1	30-10-2003
			EP 1171582 A2	16-01-2002
			EP 1180121 A1	20-02-2002
			EP 1179012 A1	13-02-2002
			EP 1105409 A2	13-06-2001
			EP 1264840 A1	11-12-2002
			ES 2185595 T3	01-05-2003
			WO 0070665 A2	23-11-2000
			JP 2003508350 T	04-03-2003
			JP 2002544287 T	24-12-2002
			JP 2003527312 T	16-09-2003
			JP 2003500341 T	07-01-2003
			NO 20015584 A	03-01-2002
			WO 0069911 A1	23-11-2000
			WO 0069900 A2	23-11-2000
			WO 0069902 A1	23-11-2000
			US 6329336 B1	11-12-2001
			US 2002049153 A1	25-04-2002
			ZA 200106676 A	19-07-2002
			ZA 200109110 A	13-06-2002
			US 2003108567 A1	12-06-2003
			US 2003108568 A1	12-06-2003
			US 6514500 B1	04-02-2003